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Remarks

Reconsideration of the pending claims is respectfully requested.

A Request for Continued Examination (RCE) was filed on December 14, 2004, in the above-identified application. This paper responds to the Advisory Action mailed December 3, 2004.

Rejection under 35 U.S.C. §103(a) (Preslar with Goodner, and further with Geffken)

In the Advisory Action with regard to the rejection of Claims 50, 58, 60-62, 72, and 73, the Examiner stated as follows:

> Regarding to arguments against claims 50, 58, 60-62, 72, and 73...have been carefully reviewed but fail to be persuasive. Applicant argues that Goodner doesn't teach the extension of one pad under another. However, Goodner was not relied on for this limitation. Instead, Preslar teaches such configuration. Goodner was relied on only for motivating a multi-layered pad, specifically, a multi-layers for a lower metal layer of a pad...

This rejection is respectfully traversed.

Contrary to the Examiner's contention, Goodner (USP 4,621,045) does not teach or suggest multi-layers for a lower metal layer of a bonding pad.

Goodner teaches a bond pad (5) that is made of two overlying layers — *a lower layer 4* and *an upper layer 6*. This is illustrated in **FIG. 2I**, shown below.

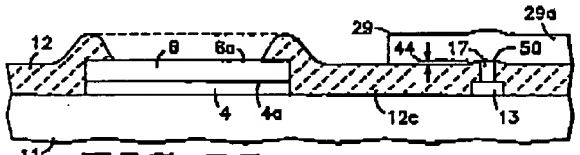

FIG. 2I

The formation of the bonding pad (4, 6) is discussed at col. 4, lines 13-44, and col. 5, lines 44-46

> FIGS. 2A-J show, in simplified schematic form, cross-sections similar to that in FIG. 1C, but in greater detail and during different stages of fabrication according to the present invention. In FIG. 2A, substrate 11, which may be any planar electronic structure using multi-layer interconnections, has thereon lower first conductor or metal-layer 13a. First metal layer 13a is patterned and etched using conventional techniques to provide lower conductor 13 **and bonding pad 4** (FIG 2B). ...Using patterns 21a-b of layer 21 as a mask, the exposed portions of layer 17a are removed so as to provide conductive pillar 17 having height 22 above substrate 11, **and portion 6 on bonding pad 4** (FIG. 2D). ...**Conductor portion 6 may be omitted.** The subsequent process steps are the same with or without portion 6. **If portion 6 is omitted bonding will take place on surface 4a rather than surface 6a.**
>
> The structure of FIG. 2D is then covered in FIG. 2E by dielectric layer 12...
>
> ...

> Following the masking operation, portion 12a of dielectric layer 12 is removed to expose surface 6a (or 4a) of bonding pad 4, 6, as shown in FIG. 2F. ...

Goodner does not teach or suggest a multi-layer for a lower metal layer of a bonding pad. Goodner teaches — a *single* layer (4) for the lower layer of the bonding pad and — a *single* layer (6) for the upper layer of the bond pad (5).

Goodner further teaches that *a single layer 4* can form the entire bonding pad. Goodner teaches that the upper layer 6 can been *eliminated* from the bonding pad structure — such that the bonding pad is a *single layer 4*. See at col. 4, lines 39-42.

Goodner does not teach or suggest forming a bonding pad having two or more lower layers.

Goodner additionally describes forming upper interconnects -- upper metallization layers 29a, 29b. This is illustrated in FIGS. 2H-2J, below.

First, a metallization layer 29 is deposited, as shown in FIG. 2H.

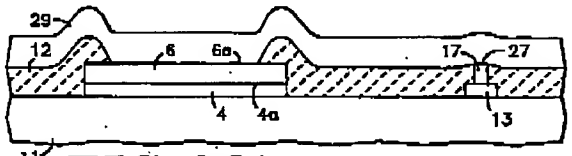

FIG. 2H

The metallization layer (29) is then *patterned* to form upper interconnect(s) (29a, 29b).

In one version — illustrated below in **FIG. 2I**, the portion of the metallization layer (29) above the bonding pad (4, 6) is removed so that surface 6a is exposed (or surface 4a is exposed if the upper metal layer 6 is eliminated), and the interconnect 29a remains. See at cols. 5-6, bridging paragraph (emphasis added).

> Upper metallization layer 29 is then applied as indicated in FIG. 2H, and patterned as shown in FIGS. 2I or J to provide upper interconnect 29a. *In **FIG. 2I** that portion of layer 29 lying above bonding pad 4, 6 is removed so that surface 6a (or 4a) is exposed and available for bonding.*

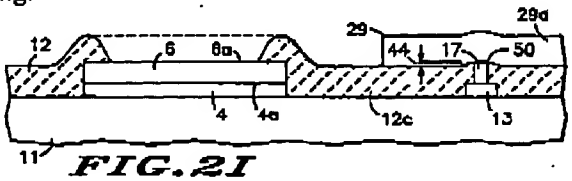

FIG. 2I

In another version — illustrated below in **FIG. 2J**, the portion of the patterned upper interconnect 29b above the bonding pad (4, 6) is left in place. See at col. 6, lines 1-5.

> In **FIG. 2J**, portion 29b of layer 29 is left in place above surface 6a (or 4a). Either arrangement is useful and the choice may be made on the basis of whether the material of regions 4, 6 or 29b is more suitable for bonding.

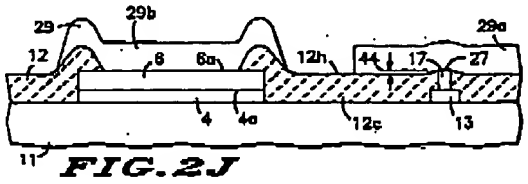

FIG. 2J

Upper interconnect 29b is *not* an element of the bonding pad. The upper interconnect 29b is a feature, well known in the art, that generally functions to electrically connect two or more active elements of an integrated circuit. The bonding pad of Goodner's structure is made of a single layer 4, or of upper and lower layers 4, 6.

Goodner teaches a bonding pad made of a *single layer 4*, —or a *single lower layer 4* and a *single upper layer 6*. Goodner does not teach or suggest a multi-layer for a lower metal layer of a bonding pad.

Likewise, Preslar (USP 5,900,643) teaches a single-layered bonding pad 36, or a two-layered bonding pad having a *single lower layer 62* and a *single upper layer 60*. See at col. 5, lines 61-62.

> FIG. 4 illustrates that the composite bonding pad 36 is preferably formed from two layers of metal.

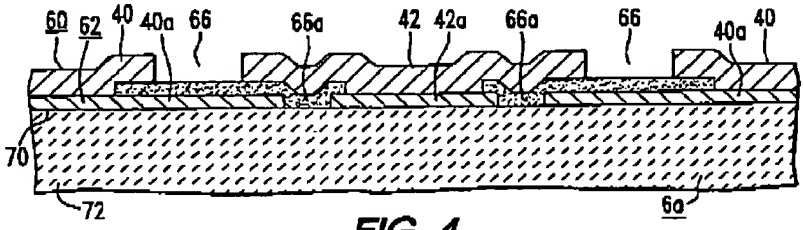

FIG. 4

Neither Preslar nor Goodner teach or suggest a bond pad structure as claimed having: at least two lower metal layers and an upper metal layer (Claims 50, 58, 60-62), or an overlying upper and two or more lower metal layers (Claims 72), or two or more lower metal layers and an overlying upper metal layer (Claim 73).

The combination of Goodner with Preslar's structure would not provide Applicant's bond pad structure as claimed. Accordingly, withdrawal of the rejections of the claims based on Preslar in combination with Goodner (alone or with Geffken) is respectfully requested.

This response is filed subsequent to the filing of a Request for Continued Examination, and prior to an action on-the-merits. As such, Applicant believes that no extension of term is required.

Based on the above remarks, the Examiner is again respectfully requested to reconsider and withdraw the rejections of the claims.

Respectfully submitted,

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